vkhp-consulting civil and structural	Project: Baker's Lane, Chartham, CT4 7QB				Job no.: 301817	
	Calcs for: Soakaway - Plot 12				Start page no./Revision: 1	
	Calcs by: MW	Calcs date: 22/05/2018	Checked by: PB	Checked date:	Approved by:	Approved date:

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.03

Design rainfall intensity

Location of catchment area	Other
Impermeable area drained to the system	A = **66.0** m^2
Return period	Period = **100** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = **0.450**
5-year return period rainfall of 60 minutes duration	M5_60min = **20.0** mm
Increase of rainfall intensity due to global warming	$p_{climate}$ = **40** %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = **800** mm
Width of pit	w = **1057** mm
Length of pit	l = **2000** mm
Percentage free volume	V_{free} = **95** %
Soil infiltration rate	f = **370.$\times$10^{-6}** m/s
Wetted area of pit 50% full	a_{s50} = l $\times$ d + w $\times$ d = **2445651** mm^2

Table equations

Inflow (cl.3.3.1)	I = M100 $\times$ A
Outflow (cl.3.3.2)	O = a_{s50} $\times$ f $\times$ D
Storage (cl.3.3.3)	S = I - O

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m^3)	Outflow (m^3)	Storage required (m^3)
5	0.39;	10.9;	1.92;	21.0;	1.39;	0.27;	1.12
10	0.54;	15.1;	1.99;	30.1;	1.99;	0.54;	1.44
15	0.65;	18.2;	2.02;	36.7;	2.42;	0.81;	1.61
30	0.82;	23.0;	2.02;	46.3;	3.06;	1.63;	1.43
60	1.00;	28.0;	1.99;	55.6;	3.67;	3.26;	0.41
120	1.19;	33.3;	1.94;	64.8;	4.27;	6.52;	0.00
240	1.38;	38.6;	1.90;	73.5;	4.85;	13.03;	0.00
360	1.51;	42.3;	1.87;	79.1;	5.22;	19.55;	0.00
600	1.68;	47.0;	1.83;	86.3;	5.69;	32.58;	0.00
1440	2.03;	56.8;	1.76;	100.2;	6.62;	78.18;	0.00

Required storage volume: S_{req} = **1.61** m^3

Soakaway storage volume: S_{act} = l $\times$ d $\times$ w $\times$ V_{free} = **1.61** m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume: t_{s50} = S_{req} $\times$ 0.5 / (a_{s50} $\times$ f) = 14min 50s

PASS - Soakaway discharge time less than or equal to 24 hours